01

TROPICAL STORM CLASSIFICAITON

Using NOAA Data

Christie Sarver
3/28/2021

AGENDA

Business Objective
Data Background
Methods
Results
Recommendations

BUSINESS OBJECTIVE

GOAL

Create a model that takes in tropical cyclone tracking data and classifies accurately whether readings indicate that a storm is a severe Tropical Storm or a less disruptive disturbance.

STAKEHOLDERS

The resulting model will be used by meterologists to understand whether an incoming storm is a major threat to a certain area, and therefore inform news agenices, local governments, and the public to prepare accordingly.

DATA BACKGROUND

Source

The National Oceanic and Atmospheric Administration's International Best Track Archive for Climate Stewardship (IBTrACS) project complies data from many agencies worldwide to provide best estimates for storms' track and intensity.

Challenges

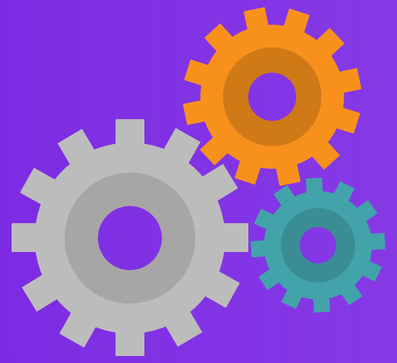
Because the data is pulled from many separate agenices worldwide, many features are duplicative, inconsistent, or difficult to interpret. The data documentation is in fact full of caveats.

Blue line represents sample hurricane track from dataset

METHODOLOGY

When selection a method, key performance indicators included recall and accuracy scores of the models, which illustrate how well they make predictions.

The model was optimized to avoid false negatives, i.e. instances where a severe storm is misclassified.

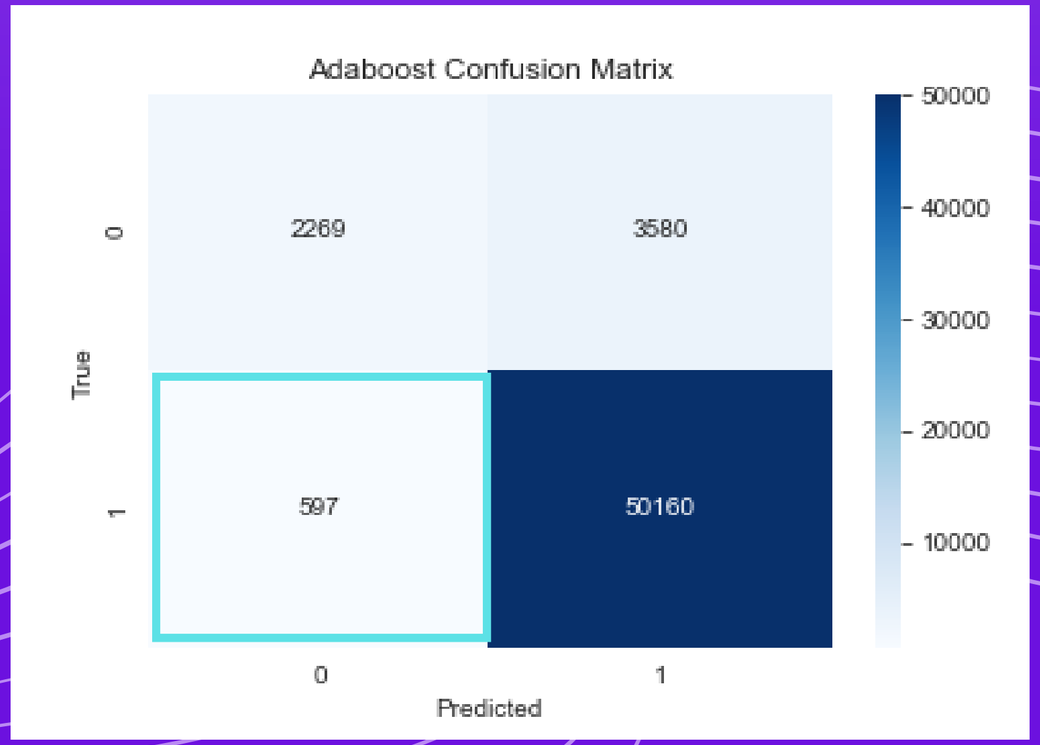


Several model types were run to determine the best methodology. The chosen model type was a boosting method, which uses machine learning to strengthen itself on errors and improve.

RESULTS

The model achieved a high recall score as compared to others. It was able to achieve 97% accuracy and produce low false negatives.

The matrix still shows some error in the form of false positives. While the model achieved the goal for this project, reducing overall error can be a goal moving forward.



RECOMMENDATIONS/ FUTURE WORK

KEEP TUNING MODEL

The model shows strong enough results to move forward with, but boosting methods can be further explored.

REVISIT FEATURES

Consider removing features to get better predictions.

RE-EXAMINE DATA

Take further time to examine/understand NOAA data and their methodology.

THANK YOU!